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Patent Application
Attorn y Dock t No. D/99136

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Hu, et al
Application No.: 09/489,144
Filed: 1/21/00
Examiner: D. Garrett
Art Unit: 1774
Title: ELECTROLUMINESCENT (EL) DEVICES

Commissioner for Patents
Washington, D.C. 20231

Sir:

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Patty Northrop
(Name of applicant, assignee, or Registered Representative)

Patty Northrop
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GROUP 1700

OFFICIAL

LETTER

Enclosed herewith is a faxed copy of an Appellants' Brief on Appeal on the above-identified application.

Please charge any fees associated with the filing of the Brief on Appeal to Xerox Corporation, Deposit Account No. 24-0025.

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01 FC:120 320.00 CH

Respectfully submitted,

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PATENT APPLICATION

ATTORNEY DOCKET NO. D/99136

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

FAX RECEIVED
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In re: Hu, et al

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Title: ELECTROLUMINESCENT (EL) DEVICES

APPELLANTS' BRIEF ON APPEAL

Application No. 09/489,144

TABLE OF CONTENTS

PAGE

TABLE OF CASES

Application No. 09/489,144

1. REAL PARTY OF INTEREST

The real party in interest in the present Appeal is Xerox Corporation, the assignee, as evidenced by the assignment set forth at Reel 010586, Frame 0281.

2. RELATED APPEALS AND INTERFERENCES

It is believed that there are no related appeals and interferences.

3. STATUS OF CLAIMS

Claims 1-19, 25-37 and 39-43 stand finally rejected.

4. STATUS OF AMENDMENTS

The Examiner stated that the amendment dated March 22, 2002 would not be entered because it raises new issues that would require further consideration and/or search. Appellants' submitted the Notice of Appeal and fee on May 15, 2002.

Appellant's amendment dated March 22, 2002 submitted in response to the Examiner's Final Office Action dated February 26, 2002 was indicated by the Examiner as failing to place the application in condition for allowance.

5. SUMMARY OF INVENTION

The present invention is directed, in embodiments to a simple organic elelctroluminescent device comprised of a layer of an organic luminescent material conductively sandwiched between an anode and a cathode, see for example, page 6, line 27 through page 21, line 23.

6. ISSUES

Whether claims 29, 30, 36, and 37, rejected under 35 U.S.C. §112, first paragraph as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, has possession of the claimed invention are, in fact, enabled?

Whether claims 10-19, 25, 26, 42, and 43, rejected under 35 U.S.C. § 102 (b) as being anticipated by Bosch are, in fact, anticipated?

Whether claims 1-9 and 27-41, rejected under 35 U.S.C. §103 (a) as being unpatentable over Bosch in view of Mori are, in fact, obvious?

7. GROUPING OF CLAIMS

Each rejected claim is separately patentable, and upon issuance of a patent, will be entitled to a separate presumption of validity under 35 U.S.C. 282. The rejected claims do not stand or fall together.

For purposes of convenience the claims are classified as follows:

Group I- claims 1-9. Independent claim 1 generally relates to an electroluminescent device comprised of an anode and a cathode with at least one electron transport layer between the anode and cathode.

Group II- claims 10-19 generally relate to an electroluminescent device comprised of, in sequence, an anode, an optional buffer layer, a hole transport layer, and electron transport layer, and in contact therewith a cathode.

Group III- claims 25-43 generally relates to an electroluminescent device.

The individual claims and the separate groups of claims are all believed to be separately patentable for the reasons of record including at least: under the claim differentiation doctrine; Appellants believe they have overcome the Examiner's cited prior art rejections; and Appellants have made repeated good-faith but unsuccessful prosecution to overcome the Examiner's non-art rejection or objection to the claims.

8. ARGUMENT

Appellants are NOT in agreement with the Examiner's assertion that the 90 mm layer thickness is an endpoint for the thickness range of the anode, buffer, and hole transport layers.

Appellants have previously, in their response dated March 22, 2002, directed the Examiner's attention to the pages and lines within the original specification where support is found for a range of thickness values.

Further, with regard to the rejection contained in paper #5, paragraph #6, and with regard to claims 29, 30, 36, and 37, the buffer layer is an optional layer, this is the only difference. The tertiary aromatic amine may appear in the hole transport layer alone, or in combination with an optional buffer layer.

With regard to claims 10-19, 25, 26, 42, and 43, these claims have been amended and are believed to be in condition for allowance.

More specifically, claims 10, 42, and 43 have been amended to include a light emitting layer situated between the hole transport layer and the electron transport layer and having a fluorescent dye ratio not disclosed in the prior art references.

With regard to claims 1-9 and 27-41, the Examiner has failed to establish a *prima facie* case of obviousness as it relates to the combination of references.

The Examiner has not pointed out where in Mori the ratio of the fluorescent dye in the light emitting layer is disclosed, reference claims 10, 24, 42, and 43 wherein the ratio recited is from about 10^{-3} to about 10 mole percent based on the moles of said light emitting layer material. Mori does not teach the use of a specific ratio of complex dyes such as coumarin, quinacridone, or an aromatic group which contains at least two conjugate-linked or two fused aromatic rings in combination with Alq_3. Mori does not teach a buffer layer containing the constituents of claim 30. In addition, Mori does not teach the buffer layer of claim 36 or the stilbene derivative of claim 37 in combination with "a monovalent or a multivalent aromatic group which contains at least two conjugate-linked or at least two fused aromatic rings".

The Examiner has not pointed out how Bosch teaches an aromatic which contains at least two conjugate-linked or two fused aromatic rings. Bosch does not disclose a buffer layer containing the constituents of claim 30. Further, Bosch does not teach the buffer layer of claim 36 or the stilbene derivative of claim 37 in combination with "a monovalent or a multivalent aromatic group which contains at least two conjugate-linked or at least two fused aromatic rings".

The motivation to modify the prior art must flow from some teaching in the art that suggests the desirability or incentive to make the modification of the combination of references needed to arrive at the claimed invention. No motivation is found in either reference for combining the light emitting layer of Bosch with the fluorescent dye of Mori. Also, neither Mori nor Bosch provide motivation for including a monovalent aromatic group or a multivalent aromatic group which contains at least two conjugate-linked or at least two fused aromatic rings with a buffer layer, a stilbene derivative, or a cathode comprised of a low work function

metal. Neither reference provides any suggestion as to why it would be desirable to combine the two disclosures.

"Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination."; accord *In re Geiger*, 815 F.2d 686, 688, 2 U.S.P.Q.2d 1276, 1278 (Fed. Cir. 1987); *In re Laskowski*, 871 F.2d 115, 117, 10 U.S.P.Q.2d 1397, 1399 (Fed. Cir. 1989) ("the mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification") (quoting *In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984)); *Sentex Systems, Inc. v. Elite Access Systems, Inc.*, 1999 U.S. App. LEXIS 3846 at *17 (unpublished) ("to invalidate claimed subject matter for obviousness, the combined teachings of the prior art references must suggest, expressly or by implication, the improvements embodied by the invention.").

Accordingly, the Examiner has not established a prima facie case of obviousness. Thus, the Board of Appeals is respectfully urged to reverse the Examiner's rejections.

Respectfully submitted,

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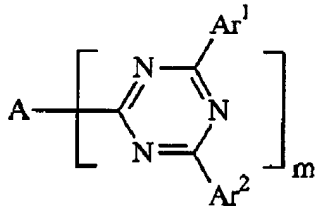
9. APPENDIX:

The following are the appealed claims:

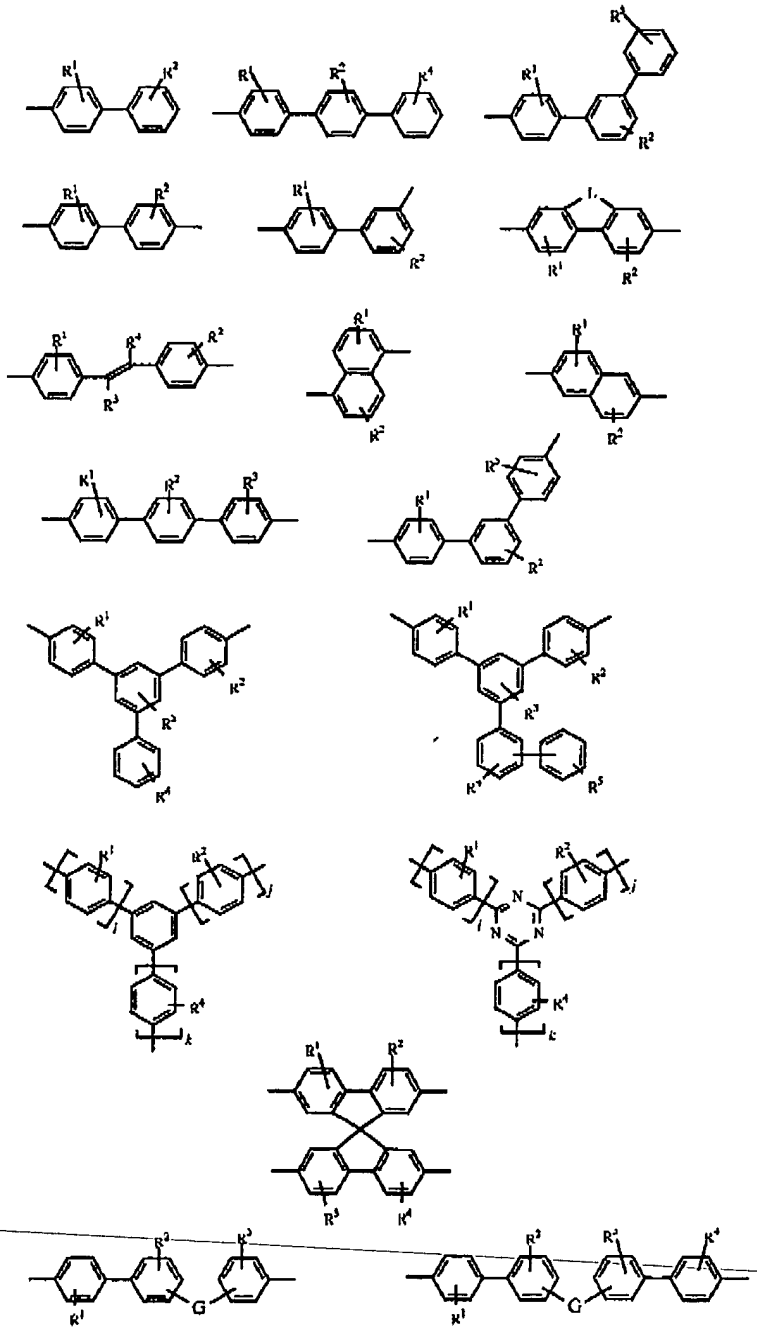
1. (Amended) An electroluminescent device comprised of an anode and a cathode, and situated therebetween said anode and said cathode at least one electron transport layer comprised of a triazine of the formula



(I)

wherein A is a monovalent or a multivalent aromatic group which contains at least two conjugate-linked or at least two fused aromatic rings; Ar^1 and Ar^2 are each independently aryl or aliphatic; and m represents the number of repeating segments and further containing a light emitting layer situated between the hole transport layer and the electron transport layer wherein the light emitting layer contains a fluorescent dye selected from the group consisting of coumarins, quinacridones, and aromatic hydrocarbon fluorescent dyes and wherein said fluorescent dye is present in an amount of from about 10^{-3} to about 10 mole percent based on the moles of said light emitting layer material.

2. An electroluminescent device in accordance with **claim 1** wherein said A aromatic group is selected from the group consisting of

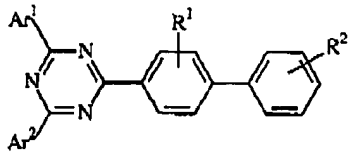


wherein R^1 to R^5 are each independently a substituent selected from the group consisting of hydrogen, aliphatic, a halogen atom, and a cyano group; L is

a divalent group selected from the group consisting of —C(R'R")—, alkylene, an oxygen atom, a sulfur atom; and —Si(R'R")— wherein R' and R" are selected from the group consisting of hydrogen, alkyl, alkoxy, and aryl; G is a divalent linkage and each i, j, and k represent the number of repeating groups.

3. An electroluminescent device in accordance with **claim 1** wherein A contains a biphenyl, a naphthyl or a terphenyl; Ar^1 and Ar^2 are each independently an aryl group selected from the group consisting of a phenyl, a biphenylyl, a naphthyl, and a stilbenyl; and wherein said aryl group optionally further contains a substituent selected from the group consisting of hydrogen, an alkyl group with from 1 to about 6 carbon atoms, an alkoxy group with from 1 to about 6 carbon atoms, a halogen, and a cyano group.

4. An electroluminescent device in accordance with **claim 1** wherein said triazine compounds are represented by the Formula (II), (III), (IV), or (V)



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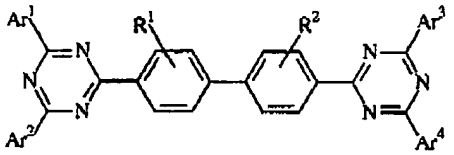

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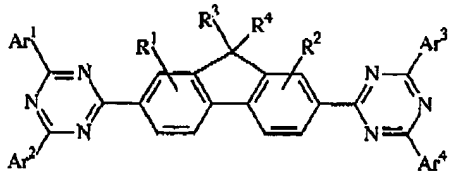

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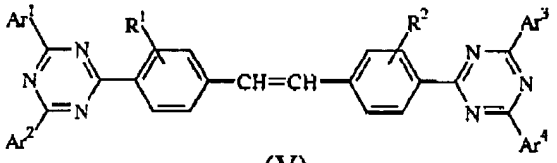


(V)

wherein Ar^1, Ar^2, Ar^3, and Ar^4 are each independently an aryl; R^1 and R^2 are substituents selected from the group consisting of hydrogen, an alkyl, an aryl, an alkoxy, a halogen atom, and a cyano; R^3 and R^4 are each a divalent group L selected from the group consisting of —C(R'R")—, alkylene, an oxygen atom, a sulfur atom, and —Si(R'R")—, wherein R' and R" are selected from the group consisting of hydrogen, alkyl, alkoxy, and aryl.

5. An electroluminescent device in accordance with **claim 4** wherein Ar^1, Ar^2, Ar^3, and Ar^4 are selected from the group consisting of a phenyl, a biphenylyl, a naphthyl, and a stilbenyl; and wherein said aryl group contains a substituent selected from the group consisting of hydrogen, an alkyl group with from 1 to about 6 carbon atoms, an alkoxy group with from 1 to about 6 carbon atoms, a halogen atom, and a cyano group.

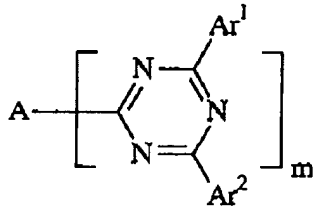
6. An electroluminescent device in accordance with **claim 4** wherein said aryl is selected from the group consisting of a phenyl, a tolyl, a methoxyphenyl, a butylphenyl, a naphthyl, and a biphenylyl; and wherein R^1 and R^2 are hydrogen or methyl.

7. An electroluminescent device in accordance with **claim 4** wherein L is —C(R′R″)—, wherein R′ and R″ is a hydrogen atom, an alkyl group containing from 1 to about 10 carbon atoms, or an alkoxyl group containing from 1 to about 10 carbon atoms.

8. An electroluminescent device in accordance with **claim 4** wherein the triazine is selected from the group consisting of 2,4,6-tris(4-biphenylyl)-1,3,5-triazine, 2,4,6-tris[4-(4′-methylbiphenylyl)]-1,3,5-triazine, 2,4,6-tris[4-(4′-tert-butylbiphenylyl)-1,3,5-triazine, 2,4,6-tris[4-(4′-methoxybiphenylyl)]-1,3,5-triazine, 4,4′-bis-[2-(4,6-diphenyl-1,3,5-triazinyl)]-1,1′-biphenyl, 4,4′-bis-[2-(4,6-di-p-tolyl-1,3,5-triazinyl)]-1,1′-biphenyl, 4,4′-bis-[2-(4,6-di-m-tolyl-1,3,5-triazinyl)]-1,1′-biphenyl, 4,4′-bis-[2-(4,6-di-p-methoxyphenyl-1,3,5-triazinyl)]-1,1′-biphenyl, 4,4′-bis-[2-(4,6-di-m-methoxyphenyl-1,3,5-triazinyl)]-1,1′-biphenyl, 4,4′-bis-[2-(4-β-naphthyl-6-phenyl-1,3,5-triazinyl)]-1,1′-biphenyl, 2,7-bis-[2-(4,6-di-phenyl-1,3,5-triazinyl)]fluorene, 2,7-bis-[2-(4,6-di-phenyl-1,3,5-triazinyl)]-9,9-dimethylfluorene, 4,4′-bis-[2-(4,6-di-phenyl-1,3,5-triazinyl)]-stilbene, and 4,4′-bis-[2-(4-phenyl-6-m-tolyl-1,3,5-triazinyl)]-stilbene.

9. An electroluminescent device in accordance with **claim 4** wherein the triazine is selected from the group consisting of 2,4,6-tris(4-biphenylyl)-1,3,5-triazine, 4,4'-bis-[2-(4,6-diphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-tolyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-m-tolyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-methoxyphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-tert-butylphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, and 4,4'-bis-[2-(4,6-diphenyl-1,3,5-triazinyl)]-stilbene.

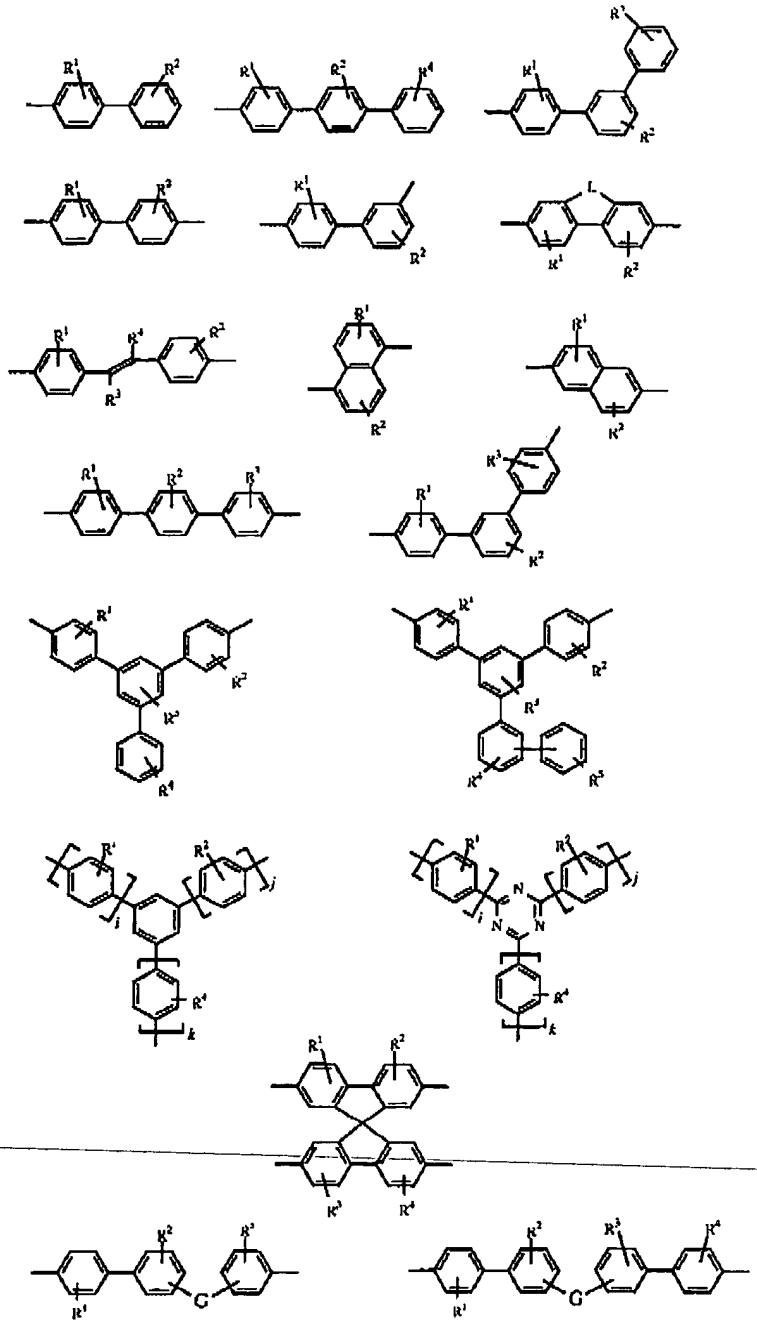
10. An electroluminescent device comprised of, in sequence, an anode, an optional buffer layer, a hole transport layer, an electron transport layer, and in contact therewith a cathode, wherein the electron transport layer contains an electron transport component comprised of a triazine compound or compounds encompassed by the formula



(I)

wherein A is an aromatic group which contains at least two conjugate-linked or two fused aromatic rings; Ar^1 and Ar^2 are each independently aryl or aliphatic; and m represents the number of repeating segments.

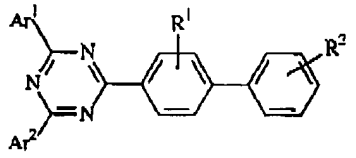
11. An electroluminescent device in accordance with **claim 10** wherein said A group is selected from the group consisting of



wherein R^1 to R^5 are each independently a substituent selected from the group consisting of hydrogen, aliphatic, a halogen atom, and a cyano group; L is a divalent group selected from the group consisting of —C(R'R")—, alkylene, an oxygen atom, a sulfur atom; and —Si(R'R")— wherein R' and R" are selected from the group consisting of hydrogen, alkyl, alkoxy, and aryl; G is a divalent linkage and each i, j, and k represent the number of repeating groups.

12. (Amended) An electroluminescent device in accordance with **claim 10** wherein A is an aromatic group which comprises a biphenyl, a naphthyl or a terphenyl; Ar^1 and Ar^2 are each independently an aryl group selected from the group consisting of a phenyl, a biphenylyl, a naphthyl, and a stilbenyl; wherein said aryl group optionally further contains a substituent selected from the group consisting of hydrogen, an alkyl group, an alkoxy group, a halogen, and a cyano group.

13. An electroluminescent device in accordance with **claim 10** wherein there is selected a triazine compound represented by the Formula (II), (III), (IV), or (V)



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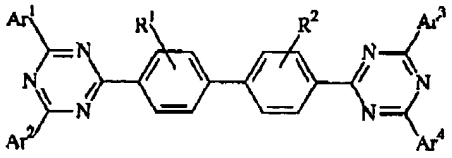

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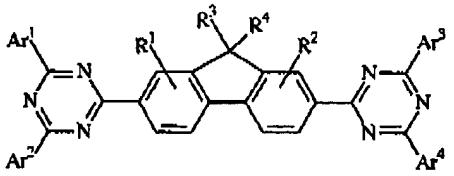

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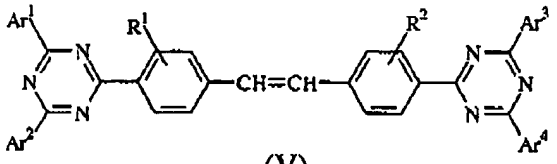


(V)

wherein Ar^1, Ar^2, Ar^3, and Ar^4 are each independently aryl; R^1 and R^2 are substituents selected from the group consisting of hydrogen, an alkyl, an aryl, an alkoxy, a halogen atom, and cyano; L is a divalent group selected from the group consisting of —C(R'R")—, alkylene, an oxygen atom, a sulfur atom, and —Si(R'R")—, wherein R' and R" are each selected from the group consisting of hydrogen, alkyl, alkoxy, and aryl.

14. An electroluminescent device in accordance with **claim 13** wherein Ar^1, Ar^2, Ar^3, and Ar^4 are selected from the group consisting of phenyl, biphenylyl, naphthyl, and stilbenyl; wherein said aryl group further contains a substituent selected from the group consisting of hydrogen, an alkyl group with from

1 to about 10 carbon atoms, an alkoxy group with from 1 to about 10 carbon atoms, a halogen atom, and a cyano group.

15. An electroluminescent device in accordance with **claim 13** wherein said aryl is selected from the group consisting of a phenyl, a tolyl, an methoxyphenyl, a butylphenyl, a naphthyl, and a biphenylyl; wherein R^1 and R^2 are hydrogen or methyl.

16. An electroluminescent device in accordance with **claim 13** wherein L is —C(R'R")—, wherein R' and R" is a hydrogen atom, an alkyl group containing from 1 to about 6 carbon atoms, or an alkoxyl group containing from 1 to about 6 carbon atoms.

17. An electroluminescent device in accordance with **claim 10** wherein the hole transport layer or the electron transport layer is a light emitting layer.

18. An electroluminescent device in accordance with **claim 10** wherein said buffer layer is comprised of a phthalocyanine or derivatives thereof, a tertiary aromatic amine, a polyaniline, or a polythiophene.

19. An electroluminescent device in accordance with **claim 10** wherein said buffer layer is comprised of the tertiary aromatic amine N,N',N,N'-tetraarylbenzidine, optionally doped with an aromatic polycyclic hydrocarbon stabilizer of rubrene or a 9,10-diphenylanthracene, wherein said stabilizer is present in an amount of from about 0.5 to about 10 weight percent, based on the weight of said tertiary aromatic amine, and said stabilizer.

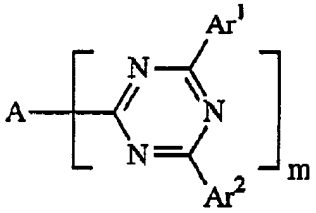
25. An electroluminescent device in accordance with **claim 10** wherein said triazine compound is selected from the group consisting of 2,4,6-tris(4-biphenylyl)-1,3,5-triazine, 2,4,6-tris[4-(4'-methylbiphenylyl)]-1,3,5-triazine, 2,4,6-tris[4-(4'-tert-butylbiphenylyl)-1,3,5-triazine, 2,4,6-tris[4-(4'-methoxybiphenylyl)]-1,3,5-triazine, 4,4'-bis-[2-(4,6-diphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-tolyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-m-tolyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-methoxyphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-m-methoxyphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4-β-naphthyl-6-phenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 2,7-bis-[2-(4,6-di-phenyl-1,3,5-triazinyl)]fluorene, 2,7-bis-[2-(4,6-di-phenyl-1,3,5-triazinyl)]-9,9-dimethyl fluorene, 4,4'-bis-[2-(4,6-di-phenyl-1,3,5-triazinyl)]-stilbene, and 4,4'-bis-[2-(4-phenyl-6-m-tolyl-1,3,5-triazinyl)]-stilbene.

26. An electroluminescent device in accordance with **claim 10** wherein said triazine compound is selected from the group consisting of 2,4,6-tris(4-biphenylyl)-1,3,5-triazine, 4,4'-bis-[2-(4,6-diphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-tolyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-m-tolyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-methoxyphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-tert-butylphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, and 4,4'-bis-[2-(4,6-di-phenyl-1,3,5-triazinyl)]-stilbene.

27. An electroluminescent device in accordance with **claim 1** wherein the anode is comprised of an indium tin oxide, and the cathode is comprised of a low work function metal.

28. An electroluminescent device in accordance with **claim 27** wherein said low work function metal is lithium, magnesium, aluminum, or each of the alloys thereof.

29. (Amended) An organic electroluminescent device comprising in the following sequence an anode comprised of indium tin oxide in a thickness of from about 90 to about 500 nanometers, an optional buffer layer comprised of a phthalocyanine or a stabilized tertiary aromatic amine and which buffer layer is of a thickness of from about 90 to about 300 nanometers, a hole transport layer comprised of a tertiary aromatic amine and which layer is of a thickness of about 90 to about 200 nanometers, a triazine electron transport layer of a thickness of from about 5 to about 300 nanometers, and a cathode comprised of a low work function metal and which cathode is of a thickness of from about 10 to about 800 nanometers and wherein said triazine is of the formula

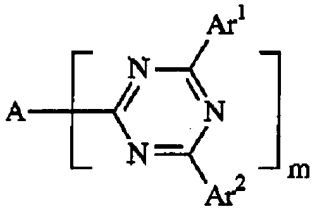


(I)

wherein A is aromatic which contains at least two conjugate-linked or two fused aromatic rings; Ar^1 and Ar^2 are each independently aryl or aliphatic; and m represents the number of repeating segments and further containing a light emitting layer situated between the hole transport layer and the electron transport layer wherein the light-emitting layer contains a fluorescent dye selected from the group consisting of coumarins, quinacridones, and aromatic hydrocarbon fluorescent dyes and wherein said fluorescent dye is present in an amount of from about 10^{-3} to about 10 mole percent based on the moles of said light emitting layer material.

30. (Amended) An organic electroluminescent device in accordance with **claim 29** wherein said anode is of a thickness of from about 90 to about 100 nanometers, said buffer layer is present and is comprised of a phthalocyanine or a stabilized tertiary aromatic amine and which layer is of a thickness of from about 90 to about 200 nanometers, a light emitting layer in contact with said hole transport layer and comprised of an 8-hydroxyquinoline metal chelate or a stilbene derivative and which layer is of a thickness of from about 1 to about 500 nanometers.

31. (Amended) An organic electroluminescent device comprised of an anode, an organic luminescent medium, and a cathode, wherein the organic luminescent medium contains a triazine layer in contact with the cathode, which layer is comprised of the triazine compounds of Formula (I), and wherein said triazine functions as an electron transport, an electron injector, or simultaneously as an electron transport and an electron injector



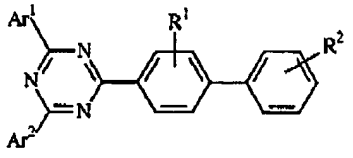
(I)

wherein A is a monovalent or a multivalent aromatic group which contains at least two conjugate-linked or at least two fused aromatic rings; Ar^1 and Ar^2 are each independently aryl or aliphatic; and m represents the number of repeating segments and further containing a light emitting layer situated between the hole transport layer and the electron transport layer wherein the light emitting layer contains a fluorescent dye selected from the group consisting of coumarins, quinacridones, and aromatic hydrocarbon fluorescent dyes and wherein said fluorescent dye is present in an amount of from about 10^{-3} to about 10 mole percent based on the moles of said light emitting layer material.

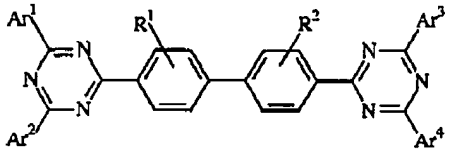
32. An organic electroluminescent device in accordance with **claim 31** wherein the cathode is comprised of lithium, magnesium, aluminum, or their alloys.

33. An organic electroluminescent device in accordance with **claim 31** wherein the cathode is comprised of aluminum.

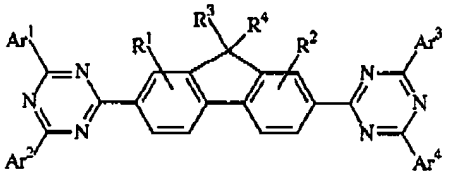
34. An organic electroluminescent device in accordance with **claim 31** wherein said trialine is represented by the Formula (II), (III), (IV), or (V)



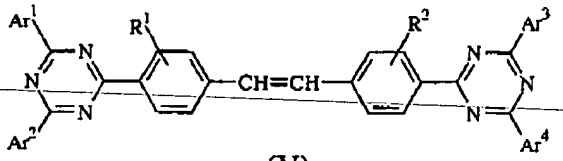
(II)



(III)



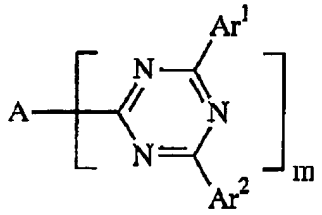
(IV)



(V)

Application No. 09/489,144

35. (Amended) An electroluminescent device comprised of an anode, a cathode, and a triazine compound of the formula



(I)

wherein A is a monovalent aromatic group or a multivalent aromatic group which contains from about 2 to about 15 two conjugate-linked or from about 2 to about 15 fused aromatic rings; Ar^1 and Ar^2 are each independently aryl or aliphatic; and m represents the number of repeating segments and is a number of from 1 to about 4, and wherein said triazine functions as an electron transport, an electron injector, or simultaneously as an electron transport and an electron injector and further containing a light emitting layer situated between the hole transport layer and the electron transport layer wherein the light emitting layer contains a fluorescent dye selected from the group consisting of coumarins, quinacridones, and aromatic hydrocarbon fluorescent dyes and wherein said fluorescent dye is present in an amount of from about 10^{-3} to about 10 mole percent based on the moles of said light emitting layer material.

36. (Amended) An organic electroluminescent device in accordance with **claim 29** wherein said anode is of a thickness of from about 90 to about 100 nanometers, said buffer layer is of a thickness of from about 90 to about 100 nanometers, said hole transport is of a thickness of from about 5 to about 100 nanometers, said triazine electron transport layer is of a thickness of from about 10 to about 100 nanometers, and said cathode is of a thickness of from about 50 to about 500 nanometers, and wherein said low work function metal is from about 2 to about 4 electron volts, and wherein Ar^1 and Ar^2 are each independently aryl.

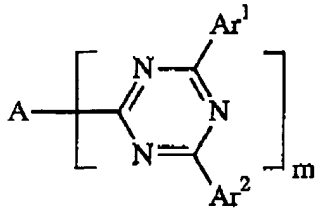
37. (Amended) An organic electroluminescent device in accordance with **claim 29** wherein said anode is of a thickness of from about 90 to about 100 nanometers, said buffer layer is of a thickness of from about 90 to about 100 nanometers, said hole transport layer is comprised of a tertiary aromatic amine in a thickness of about 90 to about 100 nanometers, thereover a light emitting layer comprised of an 8-hydroxyquinoline metal chelate or a stilbene derivative of a thickness of from about 10 to about 100 nanometers, said triazine electron transport layer is of a thickness of about 10 to about 100 nanometers, and said cathode is of a thickness of from about 50 to about 500 nanometers.

39. An electroluminescent device in accordance with **claim 1** wherein at least one is from 1 to about 10.

40. An electroluminescent device in accordance with **claim 1** wherein said at least one is from 1 to about 3.

41. An lectroluminescent device in accordance with **claim 1** wherein said at least two is from 2 to about 7.

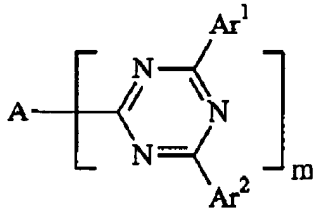
42. An electroluminescent device consisting essentially of an anode and a cathode, and situated therebetween said anode and said cathode at least one electron transport layer comprised of a triazine of the formula



(I)

wherein A is a monovalent or a multivalent aromatic group which contains at least two conjugate-linked or at least two fused aromatic rings; Ar^1 and Ar^2 are each independently aryl or aliphatic; and m represents the number.

43. An electroluminescent device consisting of an anode and a cathode, and situated therebetween said anode and said cathode at least one electron transport layer comprised of a triazine of the formula



(I)

wherein A is a monovalent or a multivalent aromatic group which contains at least two conjugate-linked or at least two fused aromatic rings; Ar^1 and Ar^2 are each independently aryl or aliphatic; and m represents the number.